

Grades 6–8: Measurement

STANDARD I. Understand measurable attributes of objects and the units, systems, and processes of measurement.

EXPECTATION A. Understand both metric and customary systems of measurement.

6	7	8
	1. Explain the relationship between the metric system and the base-ten number system.	

EXPECTATION B. Understand relationships among units and convert from one unit to another within the same system.

6	7	8
	1. Compare and convert units of measure for length, weight/mass, and volume within the U.S. customary system and the metric system. 2. Add and subtract mixed units of measure and express answers in appropriate form.	1. Use dimensional analysis to convert from one unit to another.

EXPECTATION

C. Understand, select, and use units of appropriate size and type to measure angles, perimeter, area, surface area, and volume.

6	1. Estimate angle measure using 45 degrees, 90 degrees, 180 degrees, 270 degrees, and 360 degrees as referents and use the appropriate tools to measure any angle.	7	1. Use appropriate units of measure to label angles, perimeter, and area.	8

STANDARD

II. Apply appropriate techniques, tools, and formulas to determine measurements.

EXPECTATION

A. Use common benchmarks to select appropriate methods for estimating measurements.

6	1. Use appropriate methods to approximate the surface area and volume of irregular figures.	7	1. Use appropriate methods to approximate the surface area and volume of irregular figures.	8
	2. Estimate and justify estimates of perimeter and area of irregular shapes.			

EXPECTATION

B. Select and apply techniques and tools to accurately find length, area, volume, and angle measures to appropriate levels of precision.

6	1. Select and use appropriate tools and units to measure to the degree of accuracy required in a particular situation.	7	1. Analyze a variety of measurement situations to determine the necessary degree of accuracy and precision.	8
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EXPECTATION C. Develop and use formulas to determine the circumference of circles and the area of triangles, parallelograms, trapezoids, and circles and develop strategies to find the area of more-complex shapes.

6	7	8
<p>1. Investigate and describe the relationship between areas of rectangles and triangles or other quadrilaterals.</p> <p>*2. Develop and apply the formulas for the area of triangles and parallelograms.</p>	<p>1. Use measurements and formulas to solve real-world and mathematical problems.</p> <p>2. Using concrete materials or computer models, derive approximations for π from measurements for circumference and diameter.</p>	<p>*1. Find the area of irregular shapes.</p> <p>2. Find the area of a trapezoid using the formula.</p>

EXPECTATION D. Develop strategies to determine the surface area and volume of selected prisms, pyramids, and cylinders.

6	7	8
		<p>*1. Investigate and describe the relationship between the area of the base and the volume of a prism, pyramid, and cylinder.</p>

EXPECTATION E. Solve problems involving scale factors, using ratio and proportion.

6	7	8
1. Use a scale to find distance.		<p>*1. Use the properties of similar figures to determine the length of a missing side.</p>

EXPECTATION

F. Solve simple problems involving rates and derived measurements for such attributes as velocity and density.

6	7	8
	1. Apply rates to solve problems in real-world situations.	1. Use measurements and formulas to solve real-world and mathematical problems.